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Exhibit 300: Capital Asset Summary

Part I: Summary Information And Justification (All Capital Assets)

Section A: Overview & Summary Information

Date Investment First Submitted: 2010-09-17
Date of Last Change to Activities: 2012-04-27
Investment Auto Submission Date: 2012-02-27
Date of Last Investment Detail Update: 2012-02-27
Date of Last Exhibit 300A Update: 2012-08-23
Date of Last Revision: 2012-04-27

Agency: 021 - Department of Transportation   **Bureau:** 12 - Federal Aviation Administration

Investment Part Code: 01

Investment Category: 00 - Agency Investments

1. Name of this Investment: FAAXX803: NextGen R&D Collaborative Air Traffic Management (CATM)

2. Unique Investment Identifier (UII): 021-191006983

Section B: Investment Detail

1. **Provide a brief summary of the investment, including a brief description of the related benefit to the mission delivery and management support areas, and the primary beneficiary(ies) of the investment. Include an explanation of any dependencies between this investment and other investments.**

   NextGen is a series of inter-linked programs, systems, and policies that implement advanced technologies and capabilities to dramatically change the way the current aviation system is operated. NextGen is satellite-based and relies on a network to share information and digital communications so all users of the system are aware of other users' precise locations. Th CATM solution set is a portfolio of research and development projects focused on improving efficiency of operations. It covers strategic and tactical air traffic flow management, including interactions with operators to guide choices when the FAA cannot accommodate the desired route of flight. CATM includes flow programs and collaboration on procedures that will shift flights to alternate routings, altitudes or times when there is severe weather affecting operators' planned routes, or demand for certain routes exceeds capacity. CATM also includes development of systems to distribute and manage aeronautical information, manage airspace reservations, and manage flight information from preflight to post flight analysis. Existing ATM tools for managing system demand and capacity imbalances are relatively coarse. Optimal solutions would minimize the extent to which flights are either over-constrained or under-constrained. Flight restrictions can unnecessarily interfere with optimizing operator efficiency and increase the cost of travel. Restrictions also inhibit operators from specifying a preferred alternative and constrain their involvement in resolving imbalance issues. The overall philosophy driving delivery of CATM services in NextGen is to

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accommodate flight operator preferences as much as possible. Restrictions should be imposed only when a real operational need exists. If restrictions are required, the goal is to maximize opportunity for aircraft operators to maintain operating efficiency based on their priorities while complying with the restrictions. This program is a Research and Development (R&D) effort that is currently in the planning phase and therefore final beneficiaries and dependencies have not been formally established and are subject to change. Such beneficiaries and dependencies will be clearly identified for NextGen transformational programs that are reported in their own Exhibit 300.

2. **How does this investment close in part or in whole any identified performance gap in support of the mission delivery and management support areas? Include an assessment of the program impact if this investment isn't fully funded.**

 CATM will increase efficiency and reduce congestion across the NAS.   Continuous Flight Day Evaluation involves both real-time NAS performance and post-event analysis of traffic management initiatives. Real-time constraints are transmitted to the ATC Command Center to help determine whether ground stops need to be implemented or other air traffic constraints are required. Real-time information minimizes the delays associated with flow restrictions and continuous evaluation of past performance improves future decisions about when they should be used.   Traffic Management Initiatives with Flight Specific Trajectories will generate and send flight specific trajectory changes for aircraft to FAA facilities for approval when these initiatives are implemented. This capability will increase the agility within the NAS to adjust and respond to dynamically changing conditions such as severe weather, air traffic congestion, and system outages.   Improved Management of Special Use Airspace calls for upgrading the automated links used to transfer information concerning when airspace reserved for special purposes such as military operations is not being used. Status changes are transmitted to the flight deck via voice or DataComm. Trajectory planning is managed dynamically based on real-time information on special use airspace. The ability to use special use airspace can shorten route lengths and avoid the congestion caused by forcing aircraft into narrow paths between restricted areas.   Provide Full Flight Plan Constraint Evaluation with Feedback both incorporates constraint information into FAA automation systems and makes this information available to users for pre-departure flight planning. The constraint information includes: equipment outages, air traffic congestion, status of special use airspace, and significant weather information. Providing this information will allow selection of the most efficient flight path and avoid adjustments while in flight that increase flight time and fuel burn. On-Demand NAS Information makes NAS status and aeronautical information available to users on demand. It will be available to authorized users and equipped aircraft. This will allow pilots to make informed decisions on routes to fly and conditions at departure and destination airports. Reducing funding would delay benefits beyond the 2012-2018 plan.

3. **Provide a list of this investment's accomplishments in the prior year (PY), including projects or useful components/project segments completed, new functionality added, or operational efficiency achieved.**

 Worked on implementation of pre-departure reroute with manual coordination. Developed validation plan and schedule for concept of operations: storyboarding tech., human-in-the-loop (HITL) development plan, HITL validation for strategic flow management enhancement. Completed the storyboarding simulation report and HITL results for separation management - strategic flow management integration. Completed Unified Flight Planning

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Filing Concept of Advanced Flight Planning and Filling Method for Advanced Methods – final report; the Probabilistic TRM-Area Flow Program-Simulation Result Report for flight and state data management – advanced methods; and the Initial Integrated TFM Concept of Operations document for flow control management - strategic flow management enhancement. Integrated weather into ATM report, including recommendation of requirements on applicable standard for weather.

4. **Provide a list of planned accomplishments for current year (CY) and budget year (BY).**

   Develop airport mapping services; Demonstrate SAA Scheduling services; Develop of Airborne Reroute Transfer Materials; Continue work on the CRDR for DP 354 for Strategic Flow Management Enhancement including Updated Capacity Management Software CONOPS; Final Baseline Analysis for Current TFM Operations; TFM CONOPS Final Validation Results; Refined TFM CONOPS for Mid Term; IDRP Evaluation Report with benefits; GPSM Ops Evaluation Assessment Report; AOR Ops Evaluation Report; Schedule De-peaking Alternative Analysis Report; Complete Concept of Operations Development for IARD for DP 354; Develop Aeronautical Common Services Requirements; Demonstrate and Test Deployments for Common Status and Structure Data; Conduct the NAS Common Reference demonstrations; Complete Flight Object Data Dictionary, Flight Object Data Model and XML Schema.

5. **Provide the date of the Charter establishing the required Integrated Program Team (IPT) for this investment. An IPT must always include, but is not limited to: a qualified fully-dedicated IT program manager, a contract specialist, an information technology specialist, a security specialist and a business process owner before OMB will approve this program investment budget. IT Program Manager, Business Process Owner and Contract Specialist must be Government Employees.**

2009-12-16

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Section C: Summary of Funding (Budget Authority for Capital Assets)

1.

Table I.C.1 Summary of Funding				
	PY-1 & Prior	PY 2011	CY 2012	BY 2013
Planning Costs:	$80.3	$55.8	$24.0	$24.2
DME (Excluding Planning) Costs:	$0.0	$0.0	$0.0	$0.0
DME (Including Planning) Govt. FTEs:	$0.0	$0.0	$0.0	$0.0
Sub-Total DME (Including Govt. FTE):	$80.3	$55.8	$24.0	$24.2
O & M Costs:	$0.0	$0.0	$0.0	$0.0
O & M Govt. FTEs:	$0.0	$0.0	$0.0	$0.0
Sub-Total O & M Costs (Including Govt. FTE):	0	0	0	0
Total Cost (Including Govt. FTE):	$80.3	$55.8	$24.0	$24.2
Total Govt. FTE costs:	0	0	0	0
# of FTE rep by costs:	0	0	0	0

Total change from prior year final President's Budget ($)		$-19.7	$-29.0	
Total change from prior year final President's Budget (%)		-26.11%	-54.72%	

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2. If the funding levels have changed from the FY 2012 President's Budget request for PY or CY, briefly explain those changes:

FY12 funding reduced due to FY12 appropriation adjustment as well as removal of DOT infrastructure adjustment.

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Section D: Acquisition/Contract Strategy (All Capital Assets)

Table I.D.1 Contracts and Acquisition Strategy											
Contract Type	EVM Required	Contracting Agency ID	Procurement Instrument Identifier (PIID)	Indefinite Delivery Vehicle (IDV) Reference ID	IDV Agency ID	Solicitation ID	Ultimate Contract Value ($M)	Type	PBSA ?	Effective Date	Actual or Expected End Date
Awarded		Lockheed-Martin/(DTFAWA-03-C-00015)									

2. If earned value is not required or will not be a contract requirement for any of the contracts or task orders above, explain why:

FAA's AMS includes policy and guidance on the utilization of EVM, and EVM is applied to NextGen investments in accordance with this policy. Once programs are approved and baselined, EVM is conducted in accordance with FAA and DOT policy. Investments described in this Exhibit are managed in the NextGen Portfolio Management Framework which requires project level agreements (PLAs) that document project scope, purpose, planned cost, major milestones and relationships to other programs and the NAS EA. This information is maintained in an automated tool where project managers provide monthly status on activities. The data maintained in the tool provides an annual master milestone list and current status information. For each activity a project plan and a supporting project schedule are developed to document major milestones, decisions and deliverable.

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Exhibit 300B: Performance Measurement Report

Section A: General Information

Date of Last Change to Activities: 2012-04-27

Section B: Project Execution Data

Table II.B.1 Projects					
Project ID	**Project Name**	**Project Description**	**Project Start Date**	**Project Completion Date**	**Project Lifecycle Cost ($M)**
G05A0101	Flow Control Management - Strategic Flow Management Integration	Flight planners or an operator's flight planning automation system interact with a common flow strategy and trajectory analysis service, available to all National Airspace System (NAS) stakeholders, that enables common situational awareness of current and projected NAS status and constraints. In addition to having common services to understand the potential effects on a trajectory or the effects of a flow strategy, operators and the Air Navigation Service Provider (ANSP) can collaborate on the selection of both capacity management and flow contingency management strategies that balance NAS performance objectives with flight operator goals. A transparent set of strategies is in place to achieve overall performance objectives, including airspace management to maximize capacity when demand is high, and flow			

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Table II.B.1 Projects

Project ID	Project Name	Project Description	Project Start Date	Project Completion Date	Project Lifecycle Cost ($M)
		management initiatives to ensure that safe levels of traffic are not exceeded when capacity limits are reached. Strategic Flow Management Integration (Execution of Flow Strategies into Controller Tools) implements the En Route Automation Modernization (ERAM) modifications needed to receive/process the Traffic Management Initiatives (TMI) in the ERAM baseline timeframe (releases 2 and 3). These improvements include automatic identification to controllers of aircraft affected by Traffic Flow Management (TFM) TMIs, electronic communication of the TMI information in a timely manner to the relevant ATC operational positions, tools that help monitor how well aircraft are conforming to the TMI, and tools that suggest controller actions to achieve the flow strategy.			
G05A0102	Flow Control Management - Strategic Flow Management Enhancement	Currently, flow strategies developed from the various decision support tools used by the Traffic Management Units (TMUs) are manually intensive because the tools are not integrated. Traffic Management specialists have determined the impacts of multiple Traffic Management Initiatives (TMIs) and the solutions may not be optimal because the current tools do not support analyzing the linkages between multiple TMIs. This project would allow TMU specialists to automatically explore various reroute options			

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		Table II.B.1 Projects			
Project ID	**Project Name**	**Project Description**	**Project Start Date**	**Project Completion Date**	**Project Lifecycle Cost ($M)**
		and the impact of multiple TMIs and how they fit with efforts to accommodate National Airspace System (NAS) customer preferences. By automating this process, more rapid flight reroutes can be developed, which would lead to fewer delays and less congestion. The primary goal of Air Traffic Management (ATM) is addressing demand/capacity imbalances within the NAS.			
G05A0201	Flight and State Data Management - Common Status and Structural Data (Separation, Tactical, Strategic Trajectory Management)	The Common Status and Structural Data program will address gaps within aeronautical information to achieve the NextGen shared situational awareness and trajectory based operations vision. Program activities will focus on five NextGen operational improvements.			
G05A0202	Flight and State Data Management - Advanced Methods	NextGen will benefit from a number of infrastructure enhancements, procedural changes, and system improvements that will enhance capacity and alleviate congestion. These include improvements in the flight deck and avionics, vehicle performance, communications, navigation, and air traffic control and management service provider capabilities. In the area of advanced methods for Traffic Flow Management (TFM), tools will be developed in this program, such as a common indexing of National Airspace System (NAS) resources. These tools will help solve the problem of how to guide			

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		Table II.B.1 Projects			
Project ID	**Project Name**	**Project Description**	**Project Start Date**	**Project Completion Date**	**Project Lifecycle Cost ($M)**
		flights in capacity-constrained scenarios.			
G05A0203	Flight and State Data Management - Flight Object	An information sharing mechanism, such as the Flight Object, needs to be developed in order to enable information sharing among various users and stakeholders in the National Airspace System (NAS). This allows for better coordination, situational awareness, and collaborative decision-making. Flight Object supports trajectory based operation objectives to improve capacity, efficiency, safety, and cost. Flight Object will provide standard information to be shared across flight domains and user systems, and is envisioned to support more integrated and coordinated flow planning to ensure collaboration throughout the flight. Key parts of the Flight Object are the information contained in the filed flight plan; the converted (expanded) route with applied restrictions, routes, etc.; the flight plan trajectory (the 4D path the flight intends to follow), which includes crossing key aeronautical elements, such as restrictions and volumes of airspace; the aircraft actual trajectory (the 4D path the flight has been observed to follow thus far along with maneuvers it might take to get back to flying according to the original, filed intent); the Mode-S address or beacon code allocated to the flight; the pairing information (to a track); the control information			

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Table II.B.1 Projects					
Project ID	**Project Name**	**Project Description**	**Project Start Date**	**Project Completion Date**	**Project Lifecycle Cost ($M)**
		(current Flight Information Region (FIR) controlling, current local sector controlling, stages of handoff/ transfer of control, and point-out information); and interim altitude assignments, holds, and intent information.			
G05A0204	Flight and State Data Management - Concept Development for Integrated National Airspace Design and Procedure Planning	The Integrated National Airspace Design and Procedure Planning program will enable the FAA to develop the infrastructure and framework to assess and develop an integrated airspace and procedure implementation plan based on "Best Equipped, Best Served." "Best Equipped, Best Served" or "Better Capability, Better Service" (JPDO paper) refers to the concept that better service can accrue to operators and to the National Airspace System (NAS) as more NextGen capabilities, enabled by technology, policies and procedures, are introduced. The Integrated National Airspace and Procedure Implementation Plan will align with NextGen mid-term capabilities and the FAA strategic plan. The initiative focuses on maximizing benefits and facilitating the development of the business case for industry investment with the goal for the operators to be able to have better access to the NAS by virtue of having the ability to fly in more sophisticated (not necessarily more complex) and efficient ways through the system.			
G05M0201	Joint Network Enabled Operations (NEO)	The majority of Aviation Command and Control (C2)			

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		Table II.B.1 Projects			
Project ID	**Project Name**	**Project Description**	**Project Start Date**	**Project Completion Date**	**Project Lifecycle Cost ($M)**
		systems relies on complex communications to relay information within a terminal area, but do not always lend themselves to transporting this information to remote users. The emphasis of networked enabled operations (NEO) Spiral 3 (SP3) is to examine existing and emerging FAA standards that can be applied to distribute vital information to remote users. Currently, major advancements in sensors and communications are being driven by innovative and novel web-based technical approaches through Service Oriented Architecture (SOA) design principles. The FAA business and alternative analysis results to be delivered by NEO Project SP3 is to highlight those FAA standards that will provide situational awareness and common shared information shared services (data displays) through the use of SOA approaches to start showing NextGen Strategy by 2015. NEO SP3 will demonstrate how information sharing and collaboration across multi-agency domains can be accomplished by leveraging existing technology and investments for NextGen transformation. The program will apply lessons learned from NEO SP1 and 2 emerging capability demonstrations that are traceable to the NextGen Baseline Operational Improvement (OI) Roadmap. These transformational concepts			

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Table II.B.1 Projects

Project ID	Project Name	Project Description	Project Start Date	Project Completion Date	Project Lifecycle Cost ($M)
		are the next building blocks for the NextGen concept. SP3 demonstrations will explore net-centric capabilities and collect additional data to enhance the NEO business case and validate JPDO-developed models and simulations for NextGen.			

Activity Summary

Roll-up of Information Provided in Lowest Level Child Activities

Project ID	Name	Total Cost of Project Activities ($M)	End Point Schedule Variance (in days)	End Point Schedule Variance (%)	Cost Variance ($M)	Cost Variance (%)	Total Planned Cost ($M)	Count of Activities
G05A0101	Flow Control Management - Strategic Flow Management Integration							
G05A0102	Flow Control Management - Strategic Flow Management Enhancement							
G05A0201	Flight and State Data Management - Common Status and Structural Data (Separation, Tactical, Strategic Trajectory Management)							
G05A0202	Flight and State Data Management - Advanced Methods							
G05A0203	Flight and State Data Management - Flight Object							

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Activity Summary								
Roll-up of Information Provided in Lowest Level Child Activities								
Project ID	Name	Total Cost of Project Activities ($M)	End Point Schedule Variance (in days)	End Point Schedule Variance (%)	Cost Variance ($M)	Cost Variance (%)	Total Planned Cost ($M)	Count of Activities
G05A0204	Flight and State Data Management - Concept Development for Integrated National Airspace Design and Procedure Planning							
G05M0201	Joint Network Enabled Operations (NEO)							

Key Deliverables								
Project Name	Activity Name	Description	Planned Completion Date	Projected Completion Date	Actual Completion Date	Duration (in days)	Schedule Variance (in days)	Schedule Variance (%)
NONE								

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Section C: Operational Data

Table II.C.1 Performance Metrics								
Metric Description	Unit of Measure	FEA Performance Measurement Category Mapping	Measurement Condition	Baseline	Target for PY	Actual for PY	Target for CY	Reporting Frequency
NONE								